

REPORT ON A COLLECTION OF POLYPLACOPHORA FROM PORT PHILLIP, VICTORIA.

By E. R. SYKES, B.A., F.Z.S., etc.

Read 13th March, 1896.

PLATE VI.

THE very interesting collection to which the following pages refer was formed by Mr. J. Bracebridge Wilson,¹ M.A., F.L.S., and placed in my hands by the Port Phillip Exploration Committee of the Royal Society of Victoria.

One fact brought out strikingly by a study of this collection is how little we yet know of the fauna of the Australian seas, so far as relates to the present group. Of twenty-two species, no less than seven were, when collected, new or undescribed. Five of these are described in the present paper; one has recently (December, 1895) been described by Mr. Pilsbry; and the other will, I understand, shortly appear under the name of *Ischnochiton Tateanus*, Bednall.

To Mr. Pilsbry, who has in so special a manner made the group his own, I desire to tender my most grateful thanks for the invaluable assistance he has rendered me in the elucidation of difficult points.

The first question which arises is the determination of the correct name for the Order in which these molluses are placed. In my opinion this should be POLYPLACOPHORA, Gray. The references which it is necessary to mention are as follows:—

- 1816. Polyplaxiphores, Blainville: Bull. Soc. Philom. Paris, p. 122.
- 1821. *Polyplacophora*, Gray: London Medical Repository, vol. xv, p. 234.
- 1824. *Polyplaxiphora*, Blainville: Dict. Sci. Nat., Article "Mollusques," vol. xxxii, p. 380.
- 1825. *Polyplaxiphora*, Blainville: Manuel de Malacologie, p. 601.
- 1829. *Polyplaxiphora*, Guilding: Zool. Journ., vol. v, No. 17, p. 25.
- 1879. *Polyplaciphora*, Dall: Scient. Results of Expl. of Alaska, p. 83.
- 1886. *Polyplacophora*, Haddon: Zoology of H.M.S. "Challenger," part xliii.
- 1892-4. *Polyplacophora*, Pilsbry: Man. Conch., ser. i, vols. xiv-xv.

Blainville's original publication contained no definition of the group, and he only used the French word. Gray defined the group, and he also used the Latin termination; but, curiously enough, he named as a synonym *Polyplaxiphora*, Blainville. I have been unable

¹ It is with great regret that I record Mr. Wilson's death, which occurred on October 22nd, 1895, at the age of 67.

to trace any use of the Latin termination, or any description by Blainville, prior to 1824. Since, in my judgment, Gray's name can stand as the author, the emendations of various authors appear to be unnecessary. Hermannsen has suggested that the derivation is from $\pi\omicron\lambda\upsilon\varsigma$, $\pi\lambda\acute{\alpha}\xi$, and $\phi\acute{\epsilon}\rho\omega$: it appears, however, that $\phi\omicron\rho\acute{\epsilon}\omega$ is better than the last word as the origin, since it not only makes the Latinization more accurate, but also supplies a better meaning.

The difficulties which beset those who endeavour to emend original names are illustrated in the Manual of Conchology, by Mr. Pilsbry, who, while writing *Polyplacophora*, Blainville, for the Order, still uses *Placiphora*, Gray, for a genus.

The measurements throughout this paper are taken from specimens which have somewhat contracted and curled in spirit, and an attempt has been made to allow for this. They must therefore be taken as only approximate, as, indeed, must all measurements of length in this group, when not arrived at from living specimens.

The name "Port Phillip" may convey to some persons the idea of a small area; and it may be therefore useful to note that this district contains 800 square miles, and is intermediate in size between Oxfordshire and Herefordshire.

NAME OF SPECIES.	DISTRIBUTION OUTSIDE VICTORIA.
<i>Lepidopleurus inquinatus</i> (Reeve).	New Zealand, Tasmania.
<i>Callochiton platessa</i> (Gould).	Port Jackson, New Zealand.
<i>Ischnochiton</i> (<i>Stenochiton</i>) <i>juloides</i> , Adams and Angus.	Holdfast Bay (South Australia).
<i>I. (Heterozona) cariosus</i> (Carpenter MS.), Pilsbry.	? Port Jackson, South Australia.
<i>I. crispus</i> (Reeve).	Port Jackson, Port Hacking.
<i>I. Tateanus</i> , Bednall.	South Australia.
<i>I. contractus</i> (Reeve).	South Australia, ? New South Wales West Australia, Tasmania.
<i>I. ustulatus</i> (Reeve).	New South Wales, South Australia.
<i>I. (Haploplax) pura</i> , n.sp.	
<i>I. Wilsoni</i> , n.sp.	
<i>Ischnochiton</i> , sp. ?	
<i>I. (Ischnoradsia) Australis</i> (G. B. Sby.).	Port Jackson, ? Torres Strait.
<i>Plaxiphora petholuta</i> (G. B. Sby.).	Port Lincoln, Tasmania, Port Jackson, New Zealand.
<i>Acanthochites Bednalli</i> , Pilsbry.	St. Vincent's Gulf.
<i>A. Pilsbryi</i> , n.sp.	
<i>A. (Notoplax) speciosus</i> (H. Ad.).	Tasmania, New South Wales, Flinders Island.
<i>A. (N.) Matthews</i> , Bednall and Pilsbry.	South Australia.
<i>A. (N.) glyptus</i> , n.sp.	
<i>A. (N.) Wilsoni</i> , n.sp.	
<i>Cryptoplax striatus</i> (Lam.).	Torres Straits, Port Lincoln, Port Jackson, Newcastle, Flinders Island, Tasmania.
<i>Chiton Bednalli</i> , Pilsbry.	Yorke's Peninsula.
<i>Chiton limans</i> , nom. nov.	New South Wales.

1. *LEPIDOPLEURUS INQUINATUS* (Reeve). Pl. VI, Fig. 4.

Chiton inquinatus, Reeve: Conch. Icon., pl. xxiii, fig. 154, May, 1847.
Ischnochiton inquinatus, Reeve: Pilsbry, Man. Conch., ser. I, vol. xiv,
 p. 90, pl. xviii, figs. 49, 50.

The discovery that this little-known species of Reeve is a *Lepidopleurus*, extends considerably the range of the group. The genus is generally regarded as belonging to the North Atlantic and North Pacific oceans, and its discovery in the Southern Ocean is of much interest, the nearest known species formerly having come from deep water off the Philippine Islands. I had proposed to describe this shell as a new species; and so also, I find, had Mr. Pilsbry, from specimens he had received from New Zealand. On comparing Reeve's *Chiton inquinatus* with another species, I was struck by the remarkable resemblance between the two forms; and, having had the advantage of separating the valves of one of Reeve's specimens, I am enabled to be positive as to the identification. Reeve's type came from Tasmania, and the species is therefore common to New Zealand, Tasmania, and Victoria. The sculpture of the valves is not well shown in the original figures; the general outline and colouring are fairly accurate; some specimens, however, are much darker.

2. *CALLOCHITON PLATESSA* (Gould).

Chiton platessa, Gould: Proc. Bost. Soc. N. H., vol. ii, 1846, p. 143;
 U.S. Explor. Exped., p. 320, atlas, figs. 434, 434a.
Lepidopleura platessa, Gould: Otia (Rectifications), 1862, p. 242.
Callochiton platessa, Gould: Haddon, "Challenger" Report, p. 15;
 Pilsbry, Man. Conch., ser. I, vol. xiv, p. 50, pl. x, figs. 1-5;
 Proc. Acad. Nat. Sci. Philad. 1894, p. 71.
Chiton crocinus, Reeve: Conch. Icon., pl. xxii, fig. 146, 1847.
Callochiton crocinus, Reeve: Pilsbry, Man. Conch., ser. I, vol. xiv,
 p. 50, pl. x, fig. 7; vol. xv, p. 67.
Leptochiton versicolor, A. Adams: Proc. Zool. Soc. 1852, p. 92, pl. xvi,
 fig. 5, May, 1854; Angas, Proc. Zool. Soc. 1867, p. 223.
Lepidopleurus empleurus, Hutton: Trans. N.Z. Inst., vol. iv, p. 178;
 Man. N.Z. Moll., p. 113, 1880; Pilsbry, Man. Conch.,
 ser. I, vol. xv, p. 67.

Three small specimens appear to be the young of this species. Mr. Pilsbry, in his last volume dealing with this group, has raised *C. crocinus* to the rank of a species, after having in the earlier volume placed it as a synonym. From an examination of the specimens in the British Museum, I cannot see sufficient specific distinction.

3. *ISCHNOCHITON (STENOCHITON) JULOIDES* (Adams and Angas).

Stenochiton juloides, Adams and Angas: Proc. Zool. Soc. 1864,
 p. 193; 1865, p. 58, pl. xi, fig. 15; Angas, *l.c.*, 1865,
 p. 188.
Ischnochiton (Stenochiton) juloides, Adams and Angas: Pilsbry, Man.
 Conch., ser. I, vol. xiv, p. 55, pl. xvi, figs. 6-8.

One specimen only. It is in general of a greenish hue, with the dorsal ridge yellowish, marked with brown. The colouring as described by authors is a rufous brown.

4. *ISCHNOCHITON* (*HETEROZONA*) *CARIOSUS* (Carpenter MS.), Pilsbry.

Ischnochiton (*Heterozona*) *cariosus*, Carpenter: Pilsbry, Man. Conch., ser. I, vol. xiv, p. 65, pl. xxiv, figs. 20-3; vol. xv, p. 82, pl. xiv, fig. 8.

Mr. Pilsbry notes that the anterior and posterior valves have eleven slits: in a specimen that I have separated there are only ten. This, however, is frequently a variable characteristic.

5. *ISCHNOCHITON* *CRISPUS* (Reeve).

Chiton crispus, Reeve: Conch. Icon., pl. xix, fig. 120, May, 1847.

Ischnochiton crispus, Reeve: Pilsbry, Man. Conch., ser. I, vol. xiv, p. 89, pl. xxiv, figs. 98-9.

Ischnochiton Haddoni, Pilsbry: Man. Conch., ser. I, vol. xiv, p. 88, pl. xxii, figs. 67-73; Proc. Acad. Nat. Sci. Philad. 1894, p. 71.

Chiton longicymba, Blainville: Sowerby, Conch. Illust., fig. 67; Reeve, Conch. Icon., pl. xxiv, fig. 163 (*non* Blainville).

Ischnochiton longicymba, Blainville: Haddon, "Challenger" Report, p. 17 (*non* Blainville).

This species appears to vary greatly in colour and markings. Some are nearly white, but the generally prevailing colours seem to be olive or green in various shades; some specimens have a white band along the back. One specimen is so remarkable that I venture to describe it as var. *decorata*. In this the ground colour is nearly white, and the colour pattern is formed by regular rows of nearly black bands. There are also specimens of this form in the collection of the British Museum. None of the other specimens that I have seen show any gradation to this form of colour-marking. At the request of Mr. Pilsbry, I examined specimens of his *I. Haddoni* and compared them with the type of *I. crispus*, the result being published in *The Nautilus*.¹

6. *ISCHNOCHITON* *TATEANUS*, Bednall.

From a specimen, very kindly named by Mr. Pilsbry, I have been able to identify three specimens of this, as yet undescribed, species, mingled with my *I. crispus*. I forbear to describe it, as I understand that Mr. Bednall will do so shortly.

7. *ISCHNOCHITON* *CONTRACTUS* (Reeve).

Chiton contractus, Reeve: Conch. Icon., pl. xv, fig. 78, May, 1847.

Ischnochiton contractus, Reeve: Pilsbry, Man. Conch., ser. I, vol. xiv, p. 93, pl. xxiii, figs. 81-2; Nautilus, vol. viii, p. 129.

¹ The Nautilus, vol. viii, p. 129, March, 1895.

Chiton pallidus, Reeve: Conch. Icon., pl. xvi, fig. 92, March, 1847.
Ischnochiton pallidus, Reeve: Pilsbry, Man. Conch., ser. I, vol. xiv,
 p. 89, pl. xxiii, fig. 91.

There is a nice series of this species. I have carefully compared the original tablets in the British Museum, and am unable to separate *I. contractus* and *I. pallidus*.

8. ISCHNOCHITON USTULATUS (Reeve).

Chiton ustulatus, Reeve: Conch. Icon., pl. xvii, fig. 102, March, 1847.
Lepidopleurus ustulatus, Reeve: Angas, Proc. Zool. Soc. 1867, p. 222.
Ischnochiton ustulatus, Reeve: Pilsbry, Man. Conch., ser. I, vol. xiv,
 p. 96, pl. xxiv, figs. 100, 1-4, 11, 12.

One specimen only. The valve slits are as follows: head-valve, 13; median, 1; tail-valve, 16. Some of those in the tail-valve seem to be caused by the splitting up of the slits, and probably the normal number is less than in the specimen examined. Both in the head- and tail-valve they are at very unequal distances apart. The interior of the valves is of a bluish colour near the slits, but becomes of a reddish hue towards the beaks.

9. ISCHNOCHITON (HAPLOPLAX) PURA, n.sp. Pl. VI, Figs. 3, 3a.

Shell elongate-oval, elevated, carinate. Surface smooth to the naked eye, but granular under a lens. Colour of valves nearly white, sometimes showing a faint trace of yellow. Girdle yellow-brown. The intermediate valves have straight sutures. The lateral areas are raised, and are separated from the median ones by a distinct diagonal. The sculpture over the whole of the valves is minutely granular, and in worn specimens has the effect of a series of pits. This sculpture continues right over the central carina. Valve viii is somewhat produced posteriorly, and has a projecting mucro a little behind its centre. The interior of the valves is of a whitish colour. There are eleven slits in the posterior valve, and the teeth are short: these latter are much larger in the anterior valve, where they number ten. The median valves have one slit each side, as usual in the true *Ischnochiton* group. The girdle-scales are yellowish, very small, and smooth. Length about 18 mm., breadth about 7 mm.

This interesting species, which appears to belong to the recently described¹ section *Haploplax*, does not possess any striking characteristics. It is very difficult to say whether a surface such as this shell has is really "punctate" or "granulate." This difficulty Mr. Pilsbry seems to have felt, as in the Manual of Conchology he has allowed the description of *I. smaragdinus*, Angas, to stand "most minutely punctured"; while he subsequently has made it the type of his section *Haploplax*, which is characterized as having the surface "smooth, except for minute granulation." Perhaps the shell will be

¹ Pilsbry, Proc. Acad. Nat. Sci. Philad. 1894, p. 71.

most easily recognized by its elongate form and generally white colour. "The very fine girdle-scales ally it to *Isch. ustulatus*, Reeve; but they are smooth, while *I. ustulatus* has the scales striated" (Pilsbry in MS.).

10. *ISCHNOCHITON WILSONI*, n.sp. Pl. VI, Figs. 1, 1a.

Shell oval, moderately elevated, carinate. Surface smooth to the naked eye, but under a lens minutely granular. Colour a rosy pink marked on all the valves with minute streaks and patches of white and brown. The pattern is more noticeable on the median areas in the central valves than on the lateral areas. Girdle yellowish. The sutures of the median valves are slightly concave, and the beaks are moderately prominent. The lateral areas are but very slightly raised, and the diagonal is inconspicuous, except for its being a line where the colour-marking changes in pattern. Tail-valve slightly produced posteriorly, with the mucro just in front of the middle. Interior of valves of a rosy hue. Tail-valve with ten slits; head-valve with nine slits, irregularly disposed; median with but one. The girdle-scales are small, yellowish-white, and, under a lens, conspicuously striated. Length about 16 mm., breadth about 8 mm.

This species appears to belong to the smooth group of Australian *Ischnochitons*. It is of a general rosy hue, and is not so much elongated as the last species, from which it may be at once separated, as also from *I. smaragdinus* and allied species, by its striated girdle-scales. I have much pleasure in associating with it the name of Mr. Wilson, the discoverer.

11. *ISCHNOCHITON*, sp.

The specimens are so minute that, though I cannot place them as the young of any known species, I forbear to describe them. Further specimens are required to show their true position.

12. *ISCHNOCHITON (ISCHNORADSIA) AUSTRALIS* (Sowerby).

Chiton Australis, Sowerby: Mag. Nat. Hist., n.s., vol. iv, June, 1840, p. 290; Conch. Illust., fig. 46; Reeve, Conch. Icon., pl. ii, fig. 10.

Chiton (Ischnoradsia) Australis, Sow.: Shuttlw., Bern. Mittheil. 1853, p. 66.

Lophyrus Australis, Sow.: Angas, Proc. Zool. Soc. 1867, p. 221.

Lepidoradsia Australis, Sow.: Dall, Bull. U.S. Nat. Mus., i, p. 79 (dentition), p. 115 (branchiæ), pl. ii, fig. 19 (dentition); Haddon, "Challenger" Report, p. 19.

Ischnochiton (Ischnoradsia) Australis, Sow.: Pilsbry, Man. Conch., ser. I, vol. xiv, p. 144, pl. xviii, figs. 57-9; vol. xv, p. 87, pl. xvii, figs. 68-9; Proc. Acad. Nat. Sci. Philad. 1894, p. 72.

Chiton eranidus, Sow.: Mag. Nat. Hist., n.s., vol. iv, 1840, p. 291; Conch. Illust., fig. 139.

Chiton metallicus, Reeve: Conch. Icon. 1847, pl. xvii, fig. 104.

Chiton (Lophyrus) lugubris, Gould: Proc. Bost. Soc. Nat. Hist., vol. vii, 1859, p. 163; Otia Conch., p. 116; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 146.

Several specimens. I have followed Mr. Pilsbry¹ in the above synonymy, and am able to confirm it in regard to *C. metallicus*, Reeve, as I have examined the types.

13. PLAXIPHORA PETHOLATA (Sowerby).

Chiton petholatus, Sow.: Mag. Nat. Hist., n.s., vol. iv, 1840, p. 289; Conch. Illust., figs. 64, 65, and var. *porphyrius*, fig. 59; Reeve, Conch. Icon., pl. xiv, fig. 74.

Plaxiphora petholata, Sow.: Pilsbry, Man. Conch., ser. I, vol. xiv, p. 323, pl. lxviii, figs. 62-7; Proc. Acad. Nat. Sci. Philad. 1894, p. 74.

Chatopleura conspersa, Ad. and Ang.: Proc. Zool. Soc. 1864, p. 193.

Chiton (Plaxiphora) terminalis, Cptr.: Smith, Voy. "Erebus" and "Terror," Moll., p. 4, pl. i, fig. 13.

? *Tonicia zigzag*, Hutton: Trans. N.Z. Inst., vol. iv, p. 181.

? *Chiton coelatus*, Reeve: Conch. Icon., pl. xvii, fig. 101.

Euplaxiphora modesta, Cptr.: Haddon, Rep. "Challenger," pp. 33, 34.

The species of *Plaxiphora*, as Mr. Pilsbry states in the "Manual," are in great need of revision, and it is now very difficult to identify specimens with certainty. It is quite possible that two of Blainville's species, *Chiton costatus* and *Chiton raripilosus*, may be identical with *P. petholata*; but this will probably never be clearly settled. *Chatopleura conspersa*, Ad. and Ang., is, in my opinion, only a more strongly sculptured form of *P. petholata*, thus showing a link towards *P. terminalis*, which latter was described from New Zealand. In placing *P. terminalis* in the synonymy, I am guided by an examination of the type specimens, which appear to differ only in being more strongly sculptured, and in the valves being a little narrower and longer in proportion. Mr. E. A. Smith permits me to state that he agrees in this opinion. It should be noted that in *C. conspersa* the valves are even more strongly sculptured than in *P. terminalis*. There is no doubt as to the correctness of placing *E. modesta* as a synonym. What the *Tonicia zigzag* of Hutton is, only an examination of the type specimen can settle satisfactorily: he placed it as a synonym of *Chiton coelatus*, Reeve. There do not appear to be any specimens in the Cuming Collection much resembling Reeve's figure; and the, presumably type, tablet bearing this name, appears to me only to contain a form of *P. petholata*. The *Streptochiton eupreus*, Cptr. MS., appears to be a distinct species. There is a quaint slip in the "Manual,"² where the dimensions of *T. zigzag* are given as "Length 88 inch.; breadth 31 inch." This would indeed be a fine species!

¹ Man. Conch., ser. I, vol. xiv, p. 144; xv, p. 87.

² Vol. xiv, p. 329.

14. ACANTHOCHITES BEDNALLI, Pilsbry.

Acanthochites Bednalli, Pilsbry: Proc. Acad. Nat. Sci. Philad. 1894, p. 81, pl. ii, figs. 7-11.

Two examples of this species, recently described, from St. Vincent Gulf. I have to thank Mr. Pilsbry for the identification.

15. ACANTHOCHITES PILSBRYI, n.sp. Pl. VI, Figs. 6, 6a.

Shell elongate; the valves of general greyish hue; girdle olivaceous. Intermediate valves (the exposed portions) convex behind, sculptured on the latero-pleural areas with coarse, round, scattered pustules. In valves ii to viii there is a narrow band-like jugal area, which appears smooth to the naked eye, but under a lens is seen to be obscurely striate both longitudinally and transversely. Posterior valve small, having the mucro obtuse and posterior; the posterior slope is nearly vertical. Girdle rather narrow, with eighteen tufts. The interior of the valves is of a white colour. Posterior valve with two slits, median with one, anterior not observed. Length about 10 mm., breadth 3.5 mm.

Only a single specimen, which I have much pleasure in dedicating to Mr. Pilsbry, who has done so much to advance our knowledge of the Australian species of *Acanthochites*. It falls in his "Key"¹ to the Australian species between *A. Cori*, Pils., and *A. granostriatus*, Pils. "A typical *Acanthochites*, but different from any known to me from Australia in the narrow band-like jugal tracts, smoothish and transversely striate, the latero-pleural areas being sculptured as in *A. Cori*, Pils., which species the tail-valve also resembles. The specimen is probably young" (Pilsbry in MS.). To this extremely lucid description I have nothing to add.

16. ACANTHOCHITES (NOTOPLAX) SPECIOSUS (H. Adams).

Cryptoplax (Notoplax) speciosus, H. Adams: Proc. Zool. Soc. 1861, p. 385.

Acanthochites (Notoplax) speciosus, H. Ad.: Pilsbry, Man. Conch., ser. I, vol. xv, p. 32, pl. i, figs. 23-6; Proc. Nat. Sci. Philad. 1894, p. 83, pl. iv, figs. 31-3.

This species, originally known from Tasmania and Flinders Island, has recently been noted from New South Wales. We are now able to extend its range to Victoria.

17. ACANTHOCHITES (NOTOPLAX) MATTHEWSI, Bednall and Pilsbry.

Acanthochites (Notoplax) Matthews, Bednall and Pilsbry: Nautilus, vii, p. 120; Proc. Acad. Nat. Sci. Philad. 1894, p. 83, pl. iv, figs. 27-30.

One damaged specimen: the remarkable sculpture (longitudinal riblets) on the pleural tracts will serve to distinguish this species. It was described from South Australia.

¹ Proc. Acad. Nat. Sci. Phil. 1894, p. 77.

18. *ACANTHOCHITES* (*NOTOPLAX*) *GLYPTUS*, n.sp. Pl. VI, Figs. 5, 5a.

Shell rather elongate. Exposed portions of valves rather large in proportion. Valves elevated and sharply keeled; dorsal area nearly white; other areas of a salmon-pink colour, mottled with greyish, in varying pattern, but darkest near to the dorsal area. Girdle olive-brown; the tufts of a lighter colour. Intermediate valves convex behind and slightly concave in front. Dorsal area wedge-shaped, moderately large, smooth to the naked eye, but showing indistinct traces of sculpture under a lens. Lateral areas small, smooth, very slightly elevated, and separated from the pleural areas by an indistinct diagonal. Pleural areas smooth, except for four incised lines on each side, which, if produced over the lateral areas, would meet at about the beaks of the valves. Anterior valve smooth, except for five very flattened ribs, corresponding to the slits in the valve. Posterior valve sculptured before the mucro, which is at about the posterior third, as the intermediate valves; behind the mucro it is smooth, save for traces of radiating ribs. Girdle with short, obscure spicules, and having 16 (?) tufts. Interior of valves whitish, with traces of green staining. Valve-slits: anterior 5, median 1-1, posterior 6. Two of the slits in the posterior valve may be caused by the splitting of a median one. Length about 22 mm., breadth about 7 mm.

This shell is remarkable for the entire absence of well-marked sculpture, except the striking incised lines. There appears to be no other known species approaching it.

19. *ACANTHOCHITES* (*NOTOPLAX*) *WILSONI*, n.sp. Pl. VI, Figs. 2, 2a.

Shell moderately elongated, the visible portions of the valves occupying about one-third the total width. Valves elevated, moderately keeled; the ridge being marked with bands of reddish and salmon-pink; the lateral areas of a dark red; the pleural areas being marked with a red and white. Girdle olivaceous, densely clothed with spicules, but showing no visible tufts. Intermediate valves convex behind and concave in front, with well-marked beaks. Dorsal area of an elongate wedge-shape, well separated from the side areas, smooth to the naked eye, but marked under a lens with longitudinal and transverse striae. Latero-pleural areas having no trace of a diagonal rib, sculptured all over with well-marked flattened tubercles. The anterior valve shows the latter sculpture all over. The posterior valve has an elevated and rather pointed mucro at about the posterior third. Interior of valves whitish, becoming stained with red under the jugal area. Valve-slits: anterior 5, median 1-1, posterior 6. Length about 25 mm., breadth about 10 mm.

The following valuable note, by Mr. Pilsbry, will give a better idea of it than any words of my own. "It differs from *A. Matthewsii* in having the entire latero-pleural tracts granose-lirate, while only the lateral areas are granose in the other; the tegmentum, especially, of the head-valve is smaller; the tail-valve approaches that of the typical *Notoplax* in form, and the girdle is densely clothed, though

